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ABSTRACT

This document examines the use of measurement tools to evaluate children's psychological development. The first part of the document discusses the identification and quantification of developmental landmarks and the reasons for evaluation. The second part reviews several evaluation instruments. The Ruth Griffiths mental development scales are used to measure psychological development in infants and young children. The Kohs block test and Florence Goodenough draw-a-man test assess nonverbal intelligence in young children. Children's vocabulary is measured by the Binois-Pichot test. The Wechsler Intelligence Scale for Children--Revised assesses the intelligence level of school-age children. Limitations of these tests are noted. Other methods of evaluating children's development include the use of health record books, professional observation, interviews, questionnaires, and a combination of instruments. The third part of the document discusses the use of assessment results and the relationship of developmental evaluation to educational programs. Appendixes include a French health record book, an observation guideline for small children, and a description of a child development research project in Argentina. A 16-item bibliography is provided. (BC)

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THE DEVELOPING CHILD :
TOOLS FOR MONITORING

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INTERNATIONAL CHILDREN'S CENTRE - PARIS

The International Children's Centre was created by the French government in 1949, on the initiative of Professor Robert Debré in particular, following negotiations between France and the United Nations. Its purpose was to furnish those international and national agencies dealing specifically with child care with training facilities and educational and informational tools in the field of child health and development, viewing children within their family and surroundings.

ICC soon turned essentially toward Third World children and devoted its activities to the training and education of personnel with social, educational and administrative responsibilities as well as medical and paramedical workers. The desire for greater efficiency has led it to work increasingly with trainers and to concentrate its efforts on the methodological and educational aspects of mother and child care programmes.

JCC is also engaged in an attempt to further study — and — action on some aspects of the life and health of children and their family, so as to contribute to practical improvement, particularly in the fields of growth, nutrition, planned parenthood, the control of transmissible and nutritional diseases, preschool and school education, the needs of disabled and underprivileged children, etc.

Over this period of more than 30 years, a large amount of documents on children and adolescents, mostly from the developing countries, has been accumulated. This international documentation has been classified and sorted out, and has been computerized since 1983 : a bibliographic data base (BIRD : « Base d'Informations Robert Debré ») may be consulted anywhere in the world, through international communications networks. ICC also publishes periodicals, educational documents and specialized bibliographic bulletins.

As for its legal status, the International Children's Centre is a foundation under french law of recognized public utility, administered by an executive board with broad international membership.

CHILDREN IN THE TROPICS

REVIEW OF THE INTERNATIONAL CHILDREN'S CENTRE

THE DEVELOPING CHILD : TOOLS FOR MONITORING

□ MICHELINE D'AGOSTINO

1991 - N° 195

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. Sida, enfant, famille. International Children's Centre, 1990.

. La relation enfant-télévision. International Children's Centre, 1991.

2
□

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INTRODUCTION

SYLVIE MANSOUR

In the present issue, *Children in the Tropics* broaches a subject which is not easy to deal with ; that is to say, the use of tools to evaluate children's psychological development.

It goes without saying that the perspective here is not one embraced by a clinical psychologist working in a child psychopathology service, in collaboration with a smoothly running interprofessional team. The purpose of the present essay is to provide a response to the preoccupations of professionals coming from widely differing horizons (both geographically speaking, as to their place of work, and with respect to their specialty) who, either because their work constantly puts them in contact with children, or because they are involved in planning programmes aimed at children, are in need of landmarks, indicators in the field of child development, to guide them in the fulfillment of their task.

Conversely, the idea is not to provide receipts, to recommend the preference of any one instrument over another one. Although specific examples are of course given (such as the Griffiths development scale, the Wechsler scales, the Denver scale or the health record used by French physicians), this is because the presentation of these tools helps to illustrate the text and contributes to critical reflexion. It is helpful to think back to the enthusiastic reception given to the introduction of quantitation in child psychology, when the first instruments were constructed, and to how that enthusiasm was subsequently dampened. Micheline d'Agostino clearly shows the limits of these instruments, and above all, the fact that child development is a whole, the dissection of which into motor development, intellectual development, development of the personality, social development, etc, is extremely artificial, and that the use of any instrument should never be done to the detriment of other sources of information on the child (information provided by informal observation, and what parents and educators have to say about the child).

As a general rule, great caution should always be exerted in interpreting the information on any child derived from these tools, but it is particularly clear that, in addition, the intercultural validity of the tools used should also be questioned (1). Micheline d'Agostino stresses the potential dangers involved in the pure and simple importation of such tools, without giving any thought to their relevance to the particular sociocultural context. It is up to grassroots teams to check on the validity of the existing instruments and/or to develop new ones, clearly a difficult task (2).

(1) B. BRIL, H. LEHALLE. *Le développement psychologique est-il universel? Approches interculturelles*. Paris : PUF, 1988.

(2) C. LANDERS, C. KAGITCIBASI. *Measuring the psychosocial development of young children. Innocenti technical workshop summary report*. UNICEF International Child Development Centre. Florence, Italy, 1990.

It is true that in many parts of the world, professionals are still engaged in a dramatic struggle to ensure the very survival of children ; even there, however, this should not mean that they need confine their concerns to the strict surveillance of children's health and physical development. Psychosocial development is equally important, but its evaluation is not a goal in itself. Such an effort can only be meaningful if it leads to the identification of possible fields of intervention, which will help to optimize the expression of these children's potential, independently of whether such interventions are situated at the individual level, in clinical practice, at the community level, through the planning and evaluation of action, or at the national level, with the implementation and evaluation of health policies.



THE EVALUATION OF CHILD DEVELOPMENT : A COMPLEX QUESTION

The evaluation of development, like development itself, is characterized by its complexity. Development is a process involving genetic as well as environmental factors. The specific potentialities of each child are the outcome of the heritage of the human race as a whole and of his or her family lineage. These only take shape and become aptitudes through the child's experiences and the quality of his or her exchanges with the environment. As Kluckhohn and Murray (1) point out, every individual is in some ways similar to all other individuals, in others similar to some other individuals and in still other ways completely unique. Similarities and differences are expressed in the development of the human being. The former are useful in determining indications which are valid for all individuals, or at least for most of them. They constitute the universal constants. The latter express the specificities of each individual, but are circumscribed within limits constituting the reference points for what is considered "normal" development in a given context. There is no universal norm, but only norms conditioned by intrinsic factors specific to each individual and by extrinsic factors characteristic of one or several human settings.

For instance, one of the landmarks for motor development is learning to walk. All children, with the exception of those with some types of physical disability, walk sooner or later in their development. The ability to walk depends on a number of factors, such as the child's potential, health, diet, pace of maturation, desire to walk, stimulation by others and latitude to move about in the milieu. The maturation process specific to the human race sets a limit before which walking is not feasible. The other factors modulate this basic fact. The "norm" for learning to walk therefore corresponds to an age range which must be determined for each population group.

Identifying landmarks

Quantifying them...

One of the aspects of the complexity of evaluation resides in the difficulty of defining landmarks and quantifying them. Another problem, and a serious one, resides in the multiplicity of the elements involved in development, and in the choice of relevant indicators for their assessment. Children develop both physically and mentally. They undergo changes on the psycho-sensorimotor, socio-emotional and cognitive levels. Their physical development, or growth, is easy to observe and to measure : they grow taller and heavier, may be weighed and measured. As for their mental development, it includes some easily observable elements such as the

(1) C. KLUCKHOHN, H. A. MURRAY. *Personality formation. The determinants.* In : C. KLUCKHOHN, H. A. MURRAY (Ed), *Personality in nature, society in Culture.* New York : Alfred A. Knopf, 1961 (2nd ed).

*Different landmarks according
the age...*

acquisition of language, and others, such as intelligence, which are much more difficult to perceive.

It is difficult to separate the mutually interacting fields of development. Physical development affects mental development and vice versa. Psychomotor and socio-emotional development influence cognitive development. Another problem involved in evaluating development is connected with its very essence. Development becomes manifest in learning and change. In early childhood, certain functions are still undeveloped and therefore cannot be measured. Furthermore, all of the functions do not mature at the same time in a same individual. As a result, it is impossible to measure the same elements at different ages. An evaluation performed in infancy cannot be compared with another performed at a later age. Each is concerned with a specific content, although both pertain to development. Their findings are not equivalent and have a particular meaning depending on the point at which they are located in the individual's history of development.

Another feature of development is its discontinuity : there are advances, stagnations and regressions in each field of development taken separately. For instance, a child's command of language progresses whereas his or her motor capabilities temporarily stagnate or regress. Like the other above-mentioned aspects, this particular one shows the difficulty inherent in the evaluation of the mind, owing to the specificities of development. The child's personality, mood and health may affect performance during an evaluative procedure, and mask his or her actual level of development.

Why evaluate development?

For different reasons, parents, physicians, educators, psychologists and all officials in charge of programmes aimed at young children need to know whether the development of the children they are caring for is proceeding properly. They need this knowledge to guide them in their action.

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Natural curiosity, concern about the child's future or conversely, projects for his or her education or even for a career incite parents to seek an evaluation that positions their child with respect to others. They want to know whether he or she is behind or ahead of others, is progressing, and will succeed in life. They actually have their own answers, right or wrong, to these questions, but they are eager to have them corroborated or corrected. This usually leads them to turn to people around them, but occasionally, too, to professionals (doctors, teachers or even psychologists).

Professionals also need to assess children's development. They do this in accordance with their specific specialty and their concerns. Physicians look at the child as a whole, at his or her physical development and more specifically his or her neurological evolution. They are concerned with the early detection of physiological anomalies or pathological difficulties which may impair proper development, and attempt to identify any syndrome encountered, with or without mental deficiency. They are also anxious to check on the efficacy of the treatments prescribed. For instance, a child suffering from malnutrition will be monitored for growth (weight, height) and psychomotor and cognitive development, so

as to assess his or her physical, motor and mental advancement. Development is a whole : malnutrition affects its different aspects, whereas a psychological problem may cause anorexia and lead to a state of malnutrition. The solutions recommended for any one growth or development problem affect every aspect and require specific evaluations.

Psychiatrists investigate children's performance in order to make diagnoses, to assess the seriousness of disorders which may impair cognitive functioning to a greater or lesser degree, and to suggest solutions.

Teachers are concerned with children's development with respect to the educational activities and learning processes of which they are in charge. They must determine whether children are progressing normally as a whole and with respect to learning, and what problems they have (with learning, health or other), in order to solve these. If they are unable to determine the cause, they occasionally request the opinion of a physician or a psychologist. Like other professionals, psychologists attempt to determine what is hindering mental development, so as to make recommendations that will help the child to progress and avoid any increase in his or her difficulties. If a language problem is detected and addressed, subsequent learning problems at school may sometimes be avoided. Delaying sending a child to school when he or she has accumulated serious retardation in infancy may prevent failure at school.

Officials in charge of programmes for children - including those who are not specialized in children - also need to assess development to measure the impact and the relevance of their interventions of all sorts (health, educational) in order to determine whether they should be pursued or redirected.

It is important to determine levels of development, be it for the evaluation of a single child or of a group of children, or to improve a programme. This knowledge is not an end in itself, however, and must be coupled with action. Evaluation is required to foresee the obstacles to children's harmonious development, and to give a direction to the activities needed for it.

To answer this question, the terms "evaluation" and "development", taken together, must be clarified. There are many definitions of the word "evaluation", including making a judgement on the value of, calculation, measurement, imprecise or approximate assessment. All may be applied to development, with the exception of "making a value judgement", which is ethically unacceptable. When applied to development, these definitions are all incomplete. The fact is, if development is synonymous with change, growth, progress and fulfillment, these definitions leave one dimension out : that is, comparison.

There are two sides to the evaluation of children's development : the measurement of a child's level of development at a given time, and the comparison of this measurement with a reference. The latter may be the same child (in a longitudinal study), other children or certain measures such as the development quotient or the intel-

ligence quotient. A variety of methods and tools are used for the evaluation of levels of development depending on the profession of the evaluators, their objectives and the age of the children involved. Comparisons of findings are based on a variety of references. What measurements and instruments are employed for evaluation? What references do they use? The answers to these questions will unfold during the discussion of the different evaluation tools.

The importance of observation

It should be emphasized that evaluation methods are essentially based on observation, which may take any number of forms. Direct observation is child-centred. Indirect observation concentrates on children's productions, such as their drawings. It may either be ongoing, within the family or an institution, or limited or periodic, within the framework of routine individual follow-up or programme evaluation. It is done informally, as events occur, or in a more or less structured framework.

As for the references, these are numerous and constitute a broad range including both the personal points of comparison of the most subjective evaluators and the mathematical data yielded by the most sophisticated statistical methods.



INSTRUMENTS FOR EVALUATING CHILDREN'S DEVELOPMENT

There are several categories of instruments for evaluation, ranging from the simplest to the extremely elaborate ; the most commonly used are tests, guidelines and questionnaires. Some take an objective view of children, others a subjective one, and the latter take the environment into consideration. Each has a specific philosophy, its own advantages and shortcomings, as well as checks on how it is used. Each throws a different light on children's development, and is helpful in orienting caring for them. It is important to be familiar with them, so as to be able to select those that are most appropriate to any given children and situations, to comprehend the meaning of the information yielded by them, and to take the best advantage of them.

PSYCHOLOGICAL TESTS

Psychological tests are the most sophisticated instruments available for evaluation. It is they that are referred to when scientific evaluation is requested. Everyone has heard of them, but few people are really familiar with them, with the exception of a minority of specialists and insiders. They are highly controversial, and induce the most contradictory attitudes, ranging from total rejection to uncritical belief in their value. It is important to know what information they yield, so as to use them adequately.

There are many tests for the evaluation of mental development. Some are specifically applied to infants from birth to age 18-24 months, older children, adolescents or adults.

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TESTS FOR INFANTS

Tests adapted to children from birth to age two years are different from those developed for older children in that certain functions are not yet developed at that age, and require a specific approach. These are also called "baby tests", or psychomotor development scales. They are based on the concept of stages of development, and on the idea that there is a parallel between psychological development and motor development. At the start of life, motor development is inseparable from the development of other facets, including intelligence.

Many motor-type aptitudes contribute to the intellectual development of small children ; the energy they invest in these clearly shows that they constitute skills rather than simple occurrences linked to maturation. Furthermore, motor learning requires concentration of efforts, just like any other, more intellectual type of learning. Postural advances, for instance, provide information on intellectual development and not simply on neurological maturation. In addition, progress in motor skills affects cognitive development in that it opens up new possibilities for investigation and experimentation. As the child becomes able to sit up or to walk, these changes in posture extend the field of vision, and enable the child to explore a larger portion of the environment. The ability to stand up frees the hands, so that the child may develop his or her

manual potential. The development of fine prehension and of eye-hand coordination leads the child to handle a great many objects, improves grasping and widens the realm of his or her acquaintances. Piaget speaks of sensorimotor intelligence to express the influence of sensory and motor activities on cognitive development.

In practice, advances in the motor and intellectual domains do not always run such a close parallel. Psychomotor development scales make the early detection of certain cases of developmental retardation possible. The information afforded by them is used to calculate the child's mental age, which specialists convert either into a development quotient (DQ) or a general intelligence quotient (GQ), depending on their orientation. What is the value of such measures? How are they calculated? The only way to answer these questions is to examine the different psychomotor development scales. It is helpful to look into the Ruth Griffiths mental development scales, for example.

These scales have been specially developed for the psychological examination of small children. The first is used only for infants, from birth to age two years. The second, more recent, is used for children from birth to age eight years: it is an extension of the original test, and a slightly less detailed version of it. Ruth Griffiths recommends use of the former test when examining children under 18 months old.

Tommy, a 20 month-old English boy, has a GQ score of 137 on the Ruth Griffiths mental development scale. Teddy, a 3 year-old Pakistani boy, has a score of 90. How should these findings be interpreted, and what information do they yield as to the future of these children: is it promising, or are difficulties probable? Some answers to these questions may be found in an analysis of the Ruth Griffiths mental development scales and of their underlying theoretical conceptions.

To construct her tests, Ruth Griffiths selected a number of aspects of development which are significant of intelligence or indicative of "mental growth". She studied the scientific literature on child development and its evaluation. She delved into the existing development scales such as those put together by Charlotte Bühler in Vienna, Nancy Bayley in the USA, and above all by the American Arnold Gesell. She observed many normal and handicapped children in England, in every kind of circumstance: at home, in the streets, in public transportation, in care-taking, educational and medical situations, and in play areas. She noted whatever she saw, day after day. The outcome of her research and observations enabled her to establish an initial experimental scale, which was tested on hundreds of London children before achieving its final form.

The second scale was built by reexamining the first scale and prolonging it, through observations on more than 2,000 children under 8 in London and other parts of England.

The scale for children under 2 requires that the examiner observe 260 maturation or performance-linked skills, which the children

The Ruth Griffiths mental development scales

Construction of the scales

must show in experimentally controlled situations, some of which require special equipment.

The circumstances, the contents of the tasks to be performed by the child, how questions are formulated, the examiner's attitude, the number of tries allowed, as well as the duration of each part of the test or item are all specified so that the results, obtained under identical conditions, will be comparable. Each item is validated by concise descriptions. For instance, a 20 month-old child is considered able to climb stairs if he or she remains upright and does not use his or her hands. It is specified that hands may be used to go down stairs. This strictness is not as absolute for infants as for older children or adults. Ruth Griffiths gives some advice for taking the characteristics of small children into account when administering the test (they are easily fatigued, and have a limited attention span), and she does not prescribe any strict order for test items. She does advise against giving several locomotor tests in a row, or placing children in an experimental situation if the same behaviour is shown spontaneously by the child. When certain items, such as smiling, or saying certain words, cannot be tested within the allotted time, she suggests that the mother (or the person who brings the child in) be questioned, and the response be used in calculating the score. She understands that for small children, although the general procedure is the same, it is probable that no two tests are administered identically.

The scale for children under 8 is constructed along the same lines as the scale for children under two. It is a prolongation of the latter, so as to provide a tool for the continuous evaluation of babies and children. In fact, Ruth Griffiths would like to extend her scale to school-age children and adults, so as to dispose of an extremely complete instrument.

The contents of the scales is directly related to Ruth Griffiths' conception of the mental development of small children and of the foundations of intelligence. The difficulty, where small children are concerned, in establishing a distinction between advances in motor skills and the evolution of various facets of personality, and particularly of the cognitive aspect of it, along with the complexity of any definition of intelligence, constitutes the conceptual framework in which the test is grounded. Ruth Griffiths views development as a whole, and her test produces a general intelligence quotient. It is based on Spearman's research on factor analysis (1). Her objective is to determine a general factor for intelligence, by observing children in a great variety of situations requiring all sorts of skills which are revealing of their intelligence. Emphasis is placed on language, which is viewed as the most important capacity. Her criticism of some scales is that they do not take it sufficiently into consideration, for it is a necessary means of communication for life within society, and a means of symbolic expression which is

(1) This is a mathematical method, the purpose of which is to convert a great many variables into a smaller number of categories or factors.



The different subscales

the basis of mental life. In her opinion, both the hands and language are instruments in the thought process, and she therefore pays special attention to progress in eye-hand coordination. She emphasizes the considerable educational importance of the hand, since it provides access to drawing and writing, through the handling of pencils on paper, both of which represent the first instruments of formal education. She considers the social environment to be specially important in modifying and influencing all of the child's experiences, and claims to be unable to determine what part of progress may be attributed to internal processes (biological maturation) and what part to external stimulation (coming from the environment and from practice). These considerations have led her to develop five subscales corresponding to five different fields of development for children under 2 years, and six for 3 to 8 year-olds.

Each subscale, as a whole, is equivalent in difficulty to the other subscales, and contains the same number of items (52 between birth and age 2, for the first scale). Items are increasingly difficult. Their hierarchy has been established on the basis of the number of successful attempts by the children who served as references for the standardization of the test.

The locomotor development scale (A) considers all those aptitudes which contribute to the acquisition of certain motor skills, such as the various stages involved in learning to stand up, walk, climb stairs, run, maintain one's balance, ride a bicycle. Many items are borrowed from the Gesell scale, but they have been revised and modified to suit the English children who served as references.

The personal and social development scale (B) is composed of observed facts indicative of the child's social development and advances in the process of social adjustment. It includes both indices of the child's acquisitions with respect to communication with others (smiling, holding out arms, playing with other children, telling one's name), increased autonomy (eating, dressing, sphincter control) and self identification (identifying certain parts of the body).

The scale for auditory and language development (C) is divided into four major stages. The first is characterized by the ability to pay attention, to listen to speech, the mother's in particular. The second corresponds to comprehension of the function of speech, one's own (expression) and that of others (communication). For infants, there is no question of understanding words. The third is the development of speech itself: the children understand many things but are not necessarily able to make themselves understood. They imitate, repeat, build up a vocabulary in relation to their personal needs and interests. In the fourth stage they learn to combine words, then phrases. Between the ages of two and eight, the test investigates the ability to understand speech and to use it: the gradual enrichment of vocabulary and syntax, the organisation of speech in increasingly long, coherent sequences. The child must name objects, representations of objects on pictures, define objects according to their use and what they are made of, repeat

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sentences containing an increasing number of syllables, construct sentences describing pictures and answer questions.

Alongside of the previous scale, in which the child listens before beginning to babble, the eye-hand coordination development scale (D) assesses the period during which the child observes his or her environment before attempting to grasp objects and to use them. It then investigates the progress in use of the hand in the child's usual activities (1) (handling blocks, rolling a ball, using a pencil on a sheet of paper, reproducing geometric shapes). The progress in grasping, the development of lateral dominance (use of a preferred hand) are observed, along with skill in performing tasks, and rapidity.

The performance scale (E) is similar to the previous one, in that the child must solve problems through handling objects. The first items evaluate the ability to use hands and arms for exploration, as well as interest in visually perceived objects. As the child grows, the complexity of the attainments increases : these range from stringing beads to constructions with blocks and embedding geometric cut-outs in a drawing. Many of the items in this scale are timed.

The practical reasoning scale (F) is applied to 2 to 8 year-olds. It contains items aimed at assessing the child's ability to master spatial and temporal orientation, and the acquisition of mathematical concepts (numbers, quantities, sizes, weights).

14 Standardization
☐ of the scales

Standardization is the establishment of a table of reference for classing an individual value (a given child's performance) with respect to all of the performances of a population group (a group of children serving as a reference). For the first scale, this was achieved on unselected babies under age 2 and living in London, and for the second, on unselected children under age 8 living in different parts of England. The two scales are broken down month by month between birth and two years. In the second scale there is a two-month breakdown for children aged 2 to 3, and from age 3 to 8 there is a 4-month breakdown. The relationship between the age mentioned and the observed performance or behaviour is statistical. An item listed for a given age - for instance, observe whether a child is able to climb stairs at 20 months, means that 50 % of children in that group were able to do this at that age. This is an average, some children were successful at 19 months or less, others at 21 months or even later.

Each subscale results in the calculation of a quotient for a specific field of development. These quotients have a value of their own, with respect to a specific aspect of development, but the test is conceived as a whole, and is intended for the calculation of a

(1) In the English settings in which Ruth Griffiths worked.

general intelligence quotient (GQ). The latter is obtained by adding up the 5 or 6 sub-quotients and calculating their average.

$$GQ = \frac{A + B + C + D + E}{5} \quad \text{or} \quad \frac{A + B + C + D + E + F}{6}$$

(0-2 years) (2-8 years)

Each quotient is calculated in terms of mental age. Success on each item counts for one point. Mental age in weeks in each sub-scale is calculated by dividing the number of points by 3 between ages 0 and 1 year and by 2 between 1 and 2 years, since there are 3 items for each week of life during the first year and 2 during the second, in the first scale for children under 2.

$$\text{Mental age in weeks} = \frac{\text{total score}}{3} \quad \text{or} \quad \frac{\text{total score}}{2}$$

(1 month - 1 year) (13-24 months)

The mental age of a child arriving at age one year and who has succeeded on items from the first and second year is calculated by dividing the first year's score by 3 and the second year's score by 2, and adding up the results.

In the second scale (from birth to age 8), there are 240 items between ages 0 and 2, and mental age is obtained by dividing the number of points by 10. Between ages 3 and 8 each item corresponds to 2 months of mental age.

Use of mental age is an arithmetic procedure for noting tests in terms of years and months, a method for establishing an equivalency between test scores, and for comparing them. The items on the tests are graded so that an "average" child of a given age achieves a score that is the same as his or her chronological age (CA) : for example, so that a six year-old child will have a mental age of six years.

Mental age is the basis on which the general intelligence quotient (GQ) is established, by multiplying the figure found by 100 and then dividing it by chronological age (CA) expressed in weeks :

$$GQ = 100 \times \frac{MA}{CA}$$

This equation, known as Stern's equation, is used by many tests to calculate the intelligence quotient (IQ) of older children and adults.

The concepts of mental age and intelligence quotient should be handled with caution. Mental age does not constitute an absolute level of mental aptitude, and does not have the same meaning at different ages. A child of 5 years (CA) with a MA of 7 does not have the same type of intelligence as a 10 year-old (CA) with a MA of 7. The intelligence quotient, in turn, is only interpretable in conjunction with the child's age : a child of 5 (CA) whose MA is 6 years has an IQ of 120, just as a child of 10 (CA) with a MA of 12.

Interpretation of the general
intelligence quotient

Quotients of the subscales
and their meaning

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Furthermore, it is difficult to use mental age in defining adult norms. Average scores for some tests cease to rise at age 12, whereas for others they continue to rise until age 20 or 25.

This quotient was calculated on the basis of the scores of children who served as references for standardization of the test. The Ruth Griffiths' scale is standardized in terms of standard scores. The figure 100 was arbitrarily chosen to represent the mean for each group of children with the same chronological age. The standard deviation (1) is 12, meaning that a child with a GQ of 112 is one standard deviation above the mean. This is an important fact for the interpretation of test results. All tests do not use the same methods of calculation, and each standard score scale has its own standard deviation. Two GQs or two IQs of 112 on different tests are not necessarily equivalent and can only be interpreted with respect to their standard deviation figures. In R. Griffiths' sample, 96 % of children had a GQ between 76 and 124 (+ or - 2 standard deviations). The extreme scores were 66 and 137.

Ruth Griffiths stresses the fact that a single measurement is not enough to make a final judgement on a child. She recommends that children with low scores on a first test be retested at regular intervals. Following several tests, a child with a GQ under 76 is viewed as definitely below average but within the limits of normalcy. Below 73, he or she is no longer within the limits of normalcy.

The existence of 5 or 6 sub-quotients is used to determine whether a child suffers from overall retardation or has a specific difficulty. This is a most important piece of information for orienting management of the child's case and finding an appropriate solution to the problem. A low quotient on the auditory and language scales, in contrast to good scores in the other fields of development, may indicate an undetected hearing impairment or a lack of stimulation through speech. It will lead to more thorough investigations of the sphere of language and hearing, but also of the child's social environment, so as to reach a complete understanding of the problem and to solve it effectively.

Ruth Griffiths points out that the sub-quotients are of equal difficulty and constitute a profile of the child. Some children are seen to be "predominantly manual" and others "predominantly verbal", on the basis of their varying success at the different scales. These profiles may be helpful in establishing educational approaches which are appropriate to each form of intelligence, but this conception is challenged where small children are concerned. The calculation of the general intelligence quotient presupposes that all of the sub-quotients are equally important. Ruth Griffiths claims that her scales may be used separately, to evaluate language only, for instance, or grouped. Scales A and D, taken together, or C and F, yield information on physical efficiency or cognitive develop-

(1) The standard deviation is equal to the square root of variance. Variance is a statistical notion expressing the scattering of scores around the mean. It is obtained by dividing the sum of the squared deviations from the mean.

Value of findings : for
diagnosis or prognosis?

ment, respectively, but the picture of development provided by use of all 5 or 6 scales is far more comprehensive.

The interpretation of the general intelligence quotient and of the sub-quotients that contribute to it is of diagnostic value. These quotients identify the child's situation with respect to the different aspects of development, and assess his or her overall level in comparison with a group of children of the same age. They show the achievements and the handicaps at the time of testing. Care must be taken in interpreting these results, since a very young child tested in an unfamiliar environment by a stranger may be inhibited and do poorly with respect to his or her actual capabilities. For a child under one, it is also important that he or she be wide awake and relaxed, if the picture is to be accurate.

Ruth Griffiths guards users against considering her test as having a predictive value. In her opinion, tests for small children, some of whose functions have not yet matured, should not be compared with the scores of older children, and these tests are in no way predictive of future achievements. The GQ does not represent anything set, final : it may rise if a happy change occurs in the child's environment, or drop, on the contrary, if negative changes (such as disease or an accident) occur. Test results may influence mothers' opinions of their babies. It is out of the question to give them the raw findings. In addition, remarks should be carefully formulated so that they will not label their baby "handicapped" in one field or another. Conversely, findings may be used to enhance the child's image in the mother's eyes, by pointing out potentialities, unsuspected by the mother, which the child possesses.

When a child progresses regularly, without encountering any particular obstacle, the GQ remains stable, or only varies slightly (plus or minus 5 % is considered non-significant).

In conclusion, and in response to the questions raised above : what does a GQ of 137 mean for Tommy, the 20 month-old English boy? What does it say about what the future holds in store?

If the reference is the group on which the test was standardized - in 1954 for the 0-2 year scale and in 1970 for the 3 to 8 year-old scale - there is no doubt that Tommy is developing well. He has gotten off to a good start and has achieved a very high score, suggesting that his future development will be good if no problem arises : this does not mean that he is precocious, nor that he is gifted.

If the framework is the present-day one, he is also seen to develop normally, but his score is not necessarily a very high one. Recent research on this test (1980) has shown that children succeed with items at a much earlier age than during the 1960's and 70's (3/5 of a month earlier during their first year and a whole month earlier during their second year), and have a higher GQ since their quotient is higher on all subscales, except for the eye-hand coordination score, which has decreased slightly. This research has shown the need for restandardization. The scale remains valid for infants and preschool children under 4. Its use beyond that age is disadvi-

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sed in England. In that country, over 4/5 of 5 year-olds do not fail on any six consecutive items, which prevents the calculation of their mental age. Testing using the R. Griffiths tests, and calculation of mental age requires that each subscale be begun with the items corresponding to the actual age minus three months, and continued using the previous or following items until the child has succeeded on at least six consecutive items within a given subscale, and also until he or she has failed on six consecutive items.

What does a GQ of 90 mean for Teddy, the 3 year-old Pakistani boy? For Teddy, who has recently arrived in England and attends a nursery school, the value of this GQ is relatively different from what it would be for an English child of the same age, even though it is one standard deviation below the mean for the reference group. A look at the sub-quotients contributing to it shows that his AQ (locomotion) is 78, his BQ (personal and social development) is 84, his CQ (hearing and language) 36, his DQ (eye-hand coordination) 120 and his EQ (performance) 132.

If Teddy were English, he might be thought to be deaf. In fact, his hearing is not impaired, but he has trouble understanding English. His arrival in England and the great changes in his life have caused inhibitions, and the child hangs on to his mother and is afraid to attempt activities such as climbing stairs; this is seen in the A and B quotients. In contrast, his D and E quotients are high, suggesting that his development is normal. Teddy should be retested, to determine his real level of development. It is probable that his GQ will rise as he adjusts to his new life and learns the language. It is only after several consecutive tests over a period of time that a diagnosis will be feasible, provided it is necessary.

If Teddy lived in Pakistan, and had never left that country, how would his GQ be interpreted? Would the interpretation be the same?

This fictitious situation corresponds to the reality encountered by all children who are evaluated using tests that are neither conceived for them nor standardized with reference to a group representative of their own population. It characterizes almost all third world children.

The development of motor and mental functions depends both on neurological maturation, on environmental influences and on practice. This explains why Teddy's global score, as well as the different partial scores, might be different. He might achieve a better language score if his mother tongue was used. This is not sure, however, since the pictures, toys and situations used in the test may be totally foreign to him. Nor is there any guarantee that his eye-hand or performance quotients would be the same, if he never had an opportunity to handle blocks, embedded pictures or a pencil. If this was the case, his GQ would be in no way comparable to the GQ of an English child for whom these are familiar situations and objects. Ruth Griffiths herself modified and restandardized the items she borrowed from A. Gesell's scale, since they referred to American children.



In addition, Teddy is not used to this type of relationship with an adult. In the tradition within which he is raised, the relationship is one of authority, and this may cause severe inhibition in the test situation.

Nonetheless, if a GQ of 90 means that an English child is developing normally and does not suffer from any handicap, the same conclusion may apply to a Pakistani child. If this GQ is below average, on the other hand, this would not necessarily mean that Teddy is not developing normally. To obtain an idea of how he is progressing, he should be retested 3, 6, or 12 months later, and the findings compared with those of the first test. He would then be evaluated in comparison with himself.

Importance of observation

Use of a same test to evaluate a child by comparing his or her scores at regular intervals is different from the approach in which the individual features of a child's development are assessed in comparison with a population used to establish means representative of the development of young children in general and within a given environment.

The interpretation of the scores obtained on the Ruth Griffiths mental development scale cannot be based on a mathematical reading of the GQ or of the quotients for the different subscales. Observation of the child's behaviour during the test and familiarity with the personal context are required if the figures are to be meaningful. In hyperactive or depressed children, for instance, test results may be inferior to the child's real capabilities. The scores reflect potential at the time of the test. The child's hyperactivity disturbs concentration, and therefore affects performance on the tests. A depression lowers the score as well.

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Despite this, the Ruth Griffiths mental development scale provides solid grounds for the assessment of children's mental development at the time of the test, and orientations for specific investigations, through its different subscales. It is a most valuable tool for workers who are aware of its conceptual framework and limits.

APPROPRIATE TESTS FOR CHILDREN OVER 3

The second Ruth Griffiths scale, for 3-8 year-olds, is in this category. From this age on, the main instruments for evaluation are intelligence tests and scales. They replace assessment of large muscle control by fine muscle control, proficiency in handling objects and in expression, both graphic and through speech.

Intelligence tests and scales are psychometric tools for evaluating an individual's potential with respect to what are considered the "intelligent" aspects of deliberate, appropriate behaviour. They measure mental aptitudes or intellectual capabilities, through what are thought to be appropriate tasks.

These tasks may be of a single type, as in verbal tests which measure intelligence through language, or non-verbal tests using proficiency in manipulation. They may be diversified (mixed), with both verbal and non-verbal tests. They are based on the idea that intelligence takes different forms, and that those chosen to be tested express intellectual efficiency and are transposable to different everyday tasks and situations. The intelligence measured in the

Non-verbal intelligence tests

The Kohs blocks test

course of specific activities is believed to be representative of general intelligence.

The Kohs blocks test was developed to measure intelligence while avoiding the interference of the language factor. This is a performance test. It makes use of 16 multicoloured blocks, each with one blue side, one white, one red, one yellow, one blue and yellow and one red and white, the latter two split diagonally. There are also 17 increasingly difficult model pictures.

The task involves use of the coloured sides of the blocks to reproduce the model pictures. As in all tests, the tasks are very explicit. Specific instructions are given for testing deaf children and non-native speakers.

At the onset, the test scores were based on three factors: successful performance, time required and accuracy, calculated according to the number of movements made in handling the blocks.

Later, only time was retained (Hutt's revision, 1930). Each picture must be successfully completed during a set time. The scores are converted into mental age, using tables. The mental age is used to calculate IQ (intelligence quotient).

When first standardized, the test used American children as reference. There have been restandardizations for Switzerland and France. Standardization establishes 11 normalized classes, so that the score may be translated, for each age group, into a standardized note between 0 and 10, expressed in terms of mental age.

The main, generally recognized quality of this test is its effective measurement of the analytic and synthetic aspects of conceptualization, including its loftiest levels, as well as visual-perceptive organization. The growing complexity of the figures to be reproduced calls upon intellectual capacities similar to those demanded by verbal tests. This test is positively correlated with other intelligence tests. It was conceived as a means of minimizing the intervention of the cultural factor, which is so important in tests involving language. It is utilized in clinical psychology.

A number of other tests have been directly inspired by the Kohs blocks test, but they show major variations, both material and methodological, with respect to the standardized 1933 test. These versions are the fruit of Grace Arthur's criticism of the revised Kohs test, and particularly of the fact that its administration takes an excessively long time.

Wechsler introduced the blocks test in some of his scales, including the WISC-R for children. The blocks used are black and red only, and the number of drawings has been reduced. Wechsler viewed the blocks as the best sub-test in his battery. These shortened versions are definitely not as advantageous as the original test, for diagnostic purposes. They do not find the same IQ as that shown by the Kohs test.

This is another non-verbal intelligence test. It is based on the existence of a parallel between expression in drawing and the development of intelligence. It uses drawing as a means of assessment



of the level of mental development, graphism being an expression of the child's potential motor skill, as well as of his or her type of perception and reference to the surrounding world.

The study of the evolution of children's drawings, and drawings of a man, in particular, has shown the existence of stages, indicative of intellectual maturation. At first, children scribble randomly. Their graphics then become intentional and imitative. The original scribbling changes as the child achieves a degree of motor and visual control. Adjustment between fine muscular control and visual perception is attained through eye-hand coordination. This is both the organization of different perceptions (tactile or visual) and a tool for coordinated, diversified action producing spatial structuration as well as motor coordination. As children acquire the ability to symbolize, they may translate and represent, in drawing, what they know and see. When children draw a man - a universally special subject - they express their perception of their own body, and their increasingly accurate perception of the outside world. First they draw what they know (intellectual realism) with no concern for what they see. At the next stage, they draw what they see (visual realism).

This is a simple test, for which the only material needed is a sheet of paper and a pencil. There is only one task, lasting about ten minutes at most, and the instructions, which may be given in any language, are simple: "draw a man". It may be administered individually or to a group.

The scoring system is simple, strict and objective. Each part of the man drawn counts for one point. The maximum is 51 points. Florence Goodenough standardized her test on 3 to 12 year-old American children. Beyond that age, children no longer progress in drawing a man. She then established a scale for the calculation of children's mental age on the basis of the number of points obtained. This mental age may be converted into an intelligence quotient, using Stern's equation.

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There have been many adaptations of this test. It is independent of vocabulary, and measures a type of intelligence which has a better predictive value for concrete activities than for adjustment to school. The draw a man test is also a projective test. Projective tests help to reveal the most hidden aspects of the personality, particularly in the case of pathological personalities.

Drawing also reveals many disorders which disturb graphic expression independently of any intellectual deficiency or deep modification of the personality. These disorders mostly indicate psychomotor or emotional difficulties. They may point to neurological damage.

The draw a man test should not be used alone to determine a child's intellectual level. Whereas a good score on this test is significant of the child's level of development, a poor score yields different information, and requires the implementation of other observation techniques. It may be the expression of anxiety concerning the body schema, depression or inhibition.

Two psychologists have investigated the validity of the draw a man test in Benin. 799 drawings done by 7 to 12 year-old schoolchildren were examined. Over 1,000 children actually passed the test, since those for whom no birth date was known, because they had not been registered with vital statistics, were not counted. Florence Goodenough's 51-point scale was used for scoring.

This study showed the general pattern for drawing a man in Beninese 7 to 12 year-olds. Beninese and European children were found to have different rhythms with respect to the age at which different stages of drawing are reached. Clearcut differences between boys and girls were evidenced, with boys almost always having better scores than girls of the same age.

It indicated that the draw a man test could be used as an intelligence test in Benin, but that specific standardization was necessary. Indeed, differences in the representation of parts of the body are evidenced. Certain elements taken into consideration in scoring the test, such as the drawing of fingers (correct number and details), are never shown by Beninese children.

The fact that drawings by Beninese children show some specific aspects, such as profiles always turned to the right, or the persistence of transparency, calls certain interpretations of the European test into question. On drawings by European children, profiles are turned to the left and this remains the case for adults. Reversed orientation is considered a sign of a personality disturbance: Zazzo, for instance, contends that turning profiles to the right is a sign of problems with autonomy and with self-assertiveness. Transparency, consisting of showing both the inside and the outside of the man (or of anything else) is only seen in European children between the ages of 5 and 9. Its persistence beyond this age is viewed as an anomaly. In Beninese boys and girls, some instances of transparency are encountered at all ages.

These examples show that even with such a simple, easily scored test, great caution must be exerted in interpreting findings in a context other than the one in which the test was standardized.

The psychologists who conducted this research attribute the differences they found to the fact that these African children living in traditional settings are not accustomed to drawing. They live in an environment which does not provide reflections of their own image (there are practically no mirrors), and are rarely in contact with pictures, be they in books, on posters or even on television.

Changes within these contexts, such as schooling for small children or the introduction of video recordings may influence scores on the draw a man test, and require renewed standardization.

Other investigations have been made of the draw a man test. For instance, Dennis and Skeels (USA) tested 6 to 9 year-olds in 55 different cultures, using the Florence Goodenough test. The IQs found ranged from 52 to 124. The lowest score (52) was seen in nomad populations in Syria, and the highest (124) in American, English and Japanese children. These scores were attained in normal settings for the culture involved. The range of IQs revealed by



this test is representative of the range corresponding to interindividual variations imputed to genetic factors.

Dennis and Skeels attribute the low scores of Syrian children to the fact that human representations are prohibited in the art of this region, as opposed to other places, where children are in contact with graphic arts. This explanation is open to controversy, since awareness of one's body and the mental representation of it is not achieved by the simple fact of seeing oneself in a mirror or observing pictures or photos of human bodies. Training in drawing is also insufficient in itself, although it does improve children's motor performances. The mental representation of the body, in other words, the notion of the body schema, an important concept for psychomotor development, requires movement, action, exchanges with the people around one. It is inseparable from experience of the body. The ability to represent this mental image in a drawing also depends on it.

These examples of the application of the draw a man test to different population groups underlines the need to be extremely cautious in interpreting findings, and to situate them constantly in the context within which they were conceived and used.

Many other tests make use of drawing. Some furnish a theme for drawing, others involve copying. This requires reproduction either of geometric shapes or of figurative pictures. The advantage of these tests is that the verbal factor is not active in them. However, since drawing calls upon a multitude of facets of personality, and depends on practice to a large extent, exclusive use of these tests for the evaluation of intelligence does not seem advisable.

Vocabulary tests have been under study for many years, and many are available to psychologists and psychiatrists working in English-speaking countries. In French-speaking countries, the Claparède scale, now considered improperly standardized, was the only practical scale in use for many years. The Binois-Pichot vocabulary test was developed to fill this gap. Its objective is the measurement of intelligence on the basis of evaluation of usual vocabulary.

Like all tests using language to evaluate intelligence, it is built on the idea that knowledge as a whole is acquired through the mediation of language. Judgement and reasoning make use of it. Its relations with thought are complex. It affects mental organization. The use of grammatical structures is a precondition for the edification of varied, complicated mental operations. Children build language actively, and receive the elements required for this from their environment. Not only do they imitate and reproduce what they hear: they select elements and combine them to produce a language of their own.

Language is connected to mental development, it is not synonymous with symbolic activity, but contributes greatly to its extension. Most intellectually deficient people suffer from the insufficient development and elaboration of language. The latter is not necessarily a sign of mental retardation, however. Vocabulary tests are positively correlated with the overall level of intellectual efficiency.

Language-based intelligence tests

R. Binois and P. Pichot's vocabulary test

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Testing requires use of printed sheets of paper (it is a pencil and paper test). The child must select the word (out of a choice of 6) that has the same meaning as the stimulus word. There is no time limit. 44 stimulus-words are given. They have only one meaning and cannot be used in both a literal sense and in one or several figurative senses. Six words are then proposed for each of the 44 stimulus-words. They include a synonym, a word that is close to and may be confused with the synonym, and four words of equivalent difficulty, number of syllables and appearance as the stimulus-word.

This easy to note test may be corrected by unspecialized workers. Standardization was done on 11 to 14 year-old French children and adults. The results are divided into 11 normalized classes : a mean and a standard deviation, which vary with age, are calculated.

This test is used to measure intelligence in children over 10 and adults. It is well correlated with other conventional intelligence tests such as the revised Stanford scale, but cannot replace them. It has great supportive value. Like all language tests, it may be accused of being closely linked to the child's past or present social environment.

Other vocabulary tests

There are other vocabulary tests, in which the task is to define words on a list. The examiner determines whether the word is known. As opposed to the synonyms tests, their application is not very practical, and assessment of responses is somewhat difficult. They are the only vocabulary tests that may be used with children under ten, and yield qualitative information.

Vocabulary tests aimed at evaluating intelligence should be distinguished from language tests aimed at detecting language difficulties or used for assessment in speech therapy. The latter are not intelligence tests, and are centred around language : pronunciation, construction, vocabulary, ability to understand and to make oneself understood.

This Wechsler Intelligence Scale for Children-Revised (WISC-R) is conceived for the individual evaluation of school-age children (age 6 years and 6 months to 16 years and 6 months). According to Wechsler, the information provided by this test indicates and represents the extent of the overall ability to behave in an intelligent fashion.

Like every attempt to evaluate intelligence, the WISC-R reflects Wechsler's conception of intelligence. He views intelligence as the individual's overall ability to understand the world around him or her, and to react adequately to it. It is a whole, an organic entity. Wechsler's intention is not to emphasize any particular skill such as abstract reasoning. He avoids placing general intelligence and cognitive aptitudes on a same plane. He does not conceive intelligence as a type of aptitude, but as something that is reflected in the way the individual thinks, speaks, acts and responds to certain stimuli.



Mixed intelligence tests

The Wechsler scale for children

Wechsler believes that intelligence may be expressed in many ways, and that if an intelligence scale is to be both effective and fair it must call upon as many different tests as possible. According to him, these subtests are means for the tested individual to communicate with the examiner. Each type of test forms a language, more or less difficult for a given individual, but no more valid than any other subtest. Tests of verbal comprehension, arithmetic reasoning and vision/motor skills all entail communication, but in different ways.

However, the capabilities and aptitudes contributing to intelligent behaviour or determining it are not only related to cognitive aptitudes and processes, and may be more closely connected with personality traits and conative aspects (1) such as motivation. Wechsler calls these "non-intellective factors". They play a role in intelligent behaviour but are not substituted for other basic aptitudes.

The WISC-R is a mixed battery of tests. It is comprised of 12 subtests divided into two distinct scales (one verbal, the other performance), corresponding to the two main modes of expression of human aptitudes. Each of them contains 6 subtests, but only 5 verbal subtests and 5 performance subtests are compulsory and are used to calculate IQ.

Wechsler intends the WISC-R for use in psychological diagnosis ; that is, for the evaluation of different degrees of mental retardation, of indications of organic mental disorders and of specific learning problems such as reading difficulties. He makes it clear that the accuracy of the diagnosis depends on the homogeneity of the reference populations, the validity of the differential criteria used, the methods employed, but also on the examiner's experience and refined use of the method. In his opinion, the meaning and relevance of a risk or of a symptom depends on the context. For instance, a low score on one of the items such as immediate recall is only meaningful in combination with the scores on other tests. When revising his test, Wechsler eliminated or modified some disadvantageous or culturally determined items. Furthermore, he considers it important that the examiner be aware of how the cultural or socioeconomic background influences the individual's responses. Interpretation of this test requires serious training, and cannot be left to non-specialists.

The WISC-R differs from other individual intelligence tests for children in that it completely eliminates the concept of mental age.

To avoid any confusion about mental age, Wechsler decided to standardize his scale : he determined the IQ by comparing the test score of each individual with the scores obtained by children in the same age group. The IQs obtained with the WISC automatically show the subject's relative position within his or her age group, at the date of the examination.

(1) Drives behind any act or effort.



The Wechsler scale for
small children

Wechsler attributed the figure 100 to the mean total score, and the standard deviation was set at 15 IQ points for all age groups. The IQs thus determined are standard IQs ; that is, they show the extent to which the individual is located below the mean score of individuals in the same age group. They represent the relative, age-related intelligence score. This score may be used to differentiate degrees of intelligence. To do this, Wechsler calculated the frequency of occurrence of different IQs in the overall reference population. 50 % of individuals have an IQ between 90 and 110, and are considered as average, those with an IQ between 80 and 90 or between 110 and 120 are viewed as having respectively a mediocre normal intelligence or a superior normal intelligence. Those between 70 and 80 are borderline cases, and the 3 % with an IQ of 70 or under are mentally deficient. Between 120 and 130 intelligence is considered superior, and beyond 130 it is exceptional.

This system develops a statistical definition of mental deficiency as well as of the degree of intelligence. The IQ does not yield any information on aetiology, however. It does not show whether intellectual potential was originally normal, and whether it was impaired by faulty educational and cultural contacts, or whether on the contrary the environment was particularly stimulating. Complementary investigations are required to determine whether the case is one of pseudo-deficiency caused by a defective environment or failure at school, or a "true" mental deficiency caused by a defect or a disease affecting some parts of the brain.

Like the Ruth Griffiths test, the interpretation of scores on the WISC-R must include observation of the child's behaviour while passing the test, and during an interview. Hyperactive children or those with emotional problems may have an underestimated IQ, which does not represent their potentialities. All of these points must be known if the child is to be properly comprehended and an appropriate solution to his or her problems sought.

Wechsler also developed a specific test (WPPSI) for children between 4 and 6 1/2 years, so as to ensure the ongoing measurement of the same aptitudes in preschool age and primary school children as in older children.

In his opinion, the IQs determined for children under two do not measure the same functions as those found later, owing to the very nature of the maturation process. This is his explanation of the low correlations between the IQs found in children under 2 and those of older children. He views the years between 4 and 6 1/2 as a decisive, specific phase in children's mental and intellectual development : one which may be evaluated in terms of "more or less", as for older children, rather than of "absence or presence", as is the case for infants. This implies that the aptitudes evaluated are the same as those encountered later, although they take different forms. Wechsler sought to determine the age at which tests that are the same as or similar to the WISC may first be used for the evaluation of small children. This led him to the conclusion that

VALUE AND LIMITS OF TESTS

this age was 4 years, and to the development of another scale, separate from the WISC, for 4 to 6 1/2 year-olds.

The WPPSI is an extension of the WISC, with a separate scale. It is composed of 11 subtests : 6 verbal and 5 performance. Five subtests of each type are used to calculate the IQ for the overall scale, thus shortening the examination time. Of the 11 subtests of the WPPSI battery, 8 are taken from the WISC (information, vocabulary, arithmetic, similarities, comprehension, filling in pictures, labyrinths and squares). Three tests (memorized phrases, animal's house and geometric shapes) are new, and replace 4 of the WISC tests. The memorized phrases test is not used to calculate IQ.

The WPPSI was originally standardized on American children. Many countries including France have restandardized it. The mean IQ is 100 and the standard deviation 15, as in the WISC-R.

This short review of some tests shows how delicate evaluation of children is, and the role that may be played by tests.

They constitute valuable tools for specialists, since they are objective, to some extent, and yield stable indicators. They are composed of well-defined, reproducible tasks, and set references with some statistical validity. They constitute a stable frame of reference within which a child's progress over time may be evaluated in comparison with him or herself (longitudinal study) as well as in comparison with a group of children. They are also useful in differential psychology, since they enable the comparison of the psychological development of children growing up in different backgrounds and raised using different educational conceptions (Japanese children and African children, children from rural and urban settings within the same country).

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However, tests have some shortcomings, which should be kept in mind. An enormous amount of work, time, patience and attention is required to devise, administer and interpret them. Sometimes they demand specific, often costly material. Neither their use nor psychological observation may be improvised ; only serious training and practical experience with them can guarantee the necessary accuracy of the tests.

Even when every effort is made to administer them under optimal conditions, the findings yielded by tests are in fact limited in comparison with their ideal objective. They yield second-hand information ; that is, information obtained through an artificially induced situation claiming objectivity. Their significance is relative, since observations are confined to a restricted part of relations with the outside world, and expressed in a specific manner (manipulation, speech, drawing). Furthermore, each test is developed and standardized within a given context, to which the examiner should refer in interpreting results. A same indicator - IQ, for instance - corresponds to variable capabilities depending on the contents of the tests used. Its meaning differs from one test to another, according to the child's age and the way it is calculated. A general intelligence quotient at 18 months does not reflect the same reality as an IQ at 12 years. The meaning of an IQ of 80 on the Wechsler is not the

same as an IQ of 80 on the Kohs blocks test. Each one expresses different realities.

An identical result on the same test may be seen differently depending on the child's cultural origins and personal history. Use of tests in intercultural settings requires that great caution be exerted in selecting them and interpreting findings. To avoid cultural biases, some researchers have attempted to develop "culture-free" tests, such as the Kohs blocks test or Cattell's "culture-free" test. The many criticisms of these tests and the unceasing effort to discover more relevant ones seem to indicate the somewhat utopian nature of this quest. Another criticism involves the inability of these tests, used alone, to indicate the origin of problems. A low score on a test may be caused by simple miscomprehension of the language used, and is not necessarily the sign of any deficiency in the child. Like the test itself and its standardization, there is nothing final about performance on a test.

An IQ is not an unchanging value : it varies if environmental conditions change. It is meaningful at a given point in time, a specific point in the child's life. It should neither be used to "label" the child, nor to determine his or her status, once and for all.

Standardization of a test is based on the performances of children living in a specific context at a given time. The latter is characterized by a way of life and of education, specific expectations of families and of society which determine the ways in which children are stimulated and the limits within which they are expected to perform. Performance changes with time, modifying the significance of these limits, which are necessarily arbitrary. Within a given society, the lower limits may be considerably raised when exigencies linked with the social context change, as is the case with the generalization and prolongation of schooling and the demand for a continually better-trained work force. A score indicative of "normalcy" for a child living at a certain time may be considered below normal 5, 10 or 20 years later, for another child.

Scores on tests do not only change with time. They have specific meanings and different implications for children living in different societies. A low IQ in a traditional rural setting may not have many repercussions, whereas it may be a handicap in some industrialized societies.

These features of tests make generalization of their use difficult, both for evaluators and with respect to the children evaluated. Their use should be reserved for trained individuals who are capable of handling them. Because they are objective, their results should not be the sole basis for decision-making, since there is the risk that they reduce the child to his or her performance on the tests. Children are not objects of evaluation, and it is essential that the information yielded by the tests be resituated in each individual's personal history and family context. To do this, other means of investigation such as questionnaires, guidelines for observation and interviews will be found necessary.

OTHER TOOLS FOR EVALUATION

GUIDELINES

A health record book

These other tools are child-centred, environment-centred or centred around the child within his or her environment. They are innumerable, but only a few examples are discussed below.

Such books (1) provide ongoing guidelines for observation of children. Their purpose is to bring together all medical events pertaining to the individual from birth to age 20. They are designed for physicians. They contain information on the child, his or her birth, growth and medical surveillance, including development from birth to age 20, vaccinations, diseases, hospitalizations. The techniques used are talks with the child's family and direct observation. The health record book is in the hands of the family, which gives it to the doctor whenever the child is examined (MCH, private physician, school). The information gathered serves to identify the child as well as the family (mother, father, siblings) and to afford a picture of his or her living conditions and history.

Monitoring of development is divided into periods and materialized by guidelines for the examinations prescribed at key points in the child's life. They correspond to major stages in development. Some examinations are compulsory and are a part of the network of preventive measures for the protection of children. All aim at detecting anomalies, determining the need for complementary examinations in case of doubt and defining recommendations for follow-up.

Guidelines for examination at different ages are two-sided : there is a questionnaire on the child and a medical check-up.

The medical examination includes surveillance of growth and follow-up of immunization. It is most attentive to psychomotor development.

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Guidelines for examination between 4 months and 2 years include 7 items on psychomotor development at 4 months, 5 items at 9 months and 24 months. These items are comparable to those included in development batteries for infants, and are rated by "yes" or "no".

Between ages 3 and 4, psychomotor examination is based on 7 criteria including toilet training, language, behaviour at nursery school, ability to reproduce geometric shapes. It is extended to 10 items, including large and fine muscular control, lateral dominance (hand, eye, foot), orientation in space and time, language and social behaviour for 5 to 6 year-olds.

The criterion of toilet training between ages 3 and 4 is important, since it indicates control of sphincters and the achievement of a degree of autonomy. It also represents a requirement for entering nursery school. The criteria for psychomotor development between ages 5 and 6 are oriented toward the abilities required to begin learning at school under satisfactory conditions. Most items for psychomotor development are rated "yes" or "no".

(1) Le carnet de santé français, Ministère des affaires sociales et de la solidarité nationale. Secrétariat d'Etat chargé de la Santé (see appendix p. 39).

Guidelines for observation by educators

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These guidelines for evaluation are conceived for the nationwide surveillance of French children. Items are limited in number and selected for maximum relevancy in rapid diagnosis of developmental abnormalities within the French population. More thorough investigations, both with respect to the child's environment and to health and development, may be found necessary once problems are identified. Medical investigations and/or psychological testing may contribute to pinpointing the diagnosis and determining what should be done.

The reference here is the doctor's norm, a personal norm depending on the children seen by him or her as well as by what he or she has read and the reference tables available for the French population. This is a more subjective norm than the one used for development scales.

These particular guidelines are only one example. There are many others, more complete or more simplified, depending on the objectives and means at the disposal of users (1). The less time the examiner is able to devote to each child, the fewer are the criteria that can be used for observation. It is important then that they be selected with great care, for different ages, so that the most urgent preventive actions may be set up.

The guidelines for observation by educators (see appendix p. 40) are an example of a tool used by educators working with small children (kindergartens, nursery and first-year primary schools - ages 5 to 8). It results in a synthesis of ongoing observation of children. Its objective is to summarize their progress, and it is completed when they leave the class or nursery school. These guidelines are based on observation of children within a group, and deals with their behaviour and learning, with reference to future schooling. It is an aid for school guidance counselling, and for the implementation of action for the prevention of failure at school.

The first part of the guidelines is concerned with identifying the child and his or her social development, viewed with reference to status within the institution. It contains indications on the child, the family (position within the family, first language, first language of parents and language spoken at home), time spent in the institution since registration, attendance, punctuality, adjustment, behaviour and relations with adults and with other children. Physical disabilities possibly affecting achievement at school are also mentioned.

The second part is centred around psychomotor development (large and finer motor muscle control, lateral dominance, independence), the child's attitudes toward creative activities - that is, development of the symbolic function and of different types of learning. The third part concentrates on aptitudes related to learning at school : language (6 items), early reading skills (6 items) and mathematics (8 items plus one open question).

These guidelines, like the ones in the French health book used for assessment before entering school, gather information on those

(1) The Denver scale for American paediatricians, for instance.

aspects of development and of capabilities that are considered important for successful schooling. Both investigate the child's living conditions at home, along with health and psychomotor and cognitive development. In each case they concentrate on observations contributing to a particular sphere of intervention, be it health or education, depending on the professional for whom they are intended.

The two observation guidelines for a same age (health book or school record) are complementary. They make use of differing competencies and professional experience. Their reference norms are more subjective, less concise than those of psychological tests. They are sufficient for the overall detection of anomalies. More thorough investigation, using psychological testing, are required when any doubt subsists.

INTERVIEWS

The interview plays an important part in evaluation, through questioning of people in contact with the child. It differs from the "clinical interview", a particularly appropriate clinical psychology method for understanding a person within the framework of a relationship. The "clinical interview" is a part of a broader context of help, care or counselling. It is not stereotyped, but is adapted to each case. It may be used to explore feelings about the day-to-day reality of family life, for instance. Clinical interviews with children remain important, even if speech is absent or not very developed. A relationship may be established through other means of exchange such as play or drawing. Observation of children's behaviour and of the way they relate to others yields much information which is helpful in understanding them. Clinical interviews of children differ from interviews with parents. They are not interchangeable and each plays a distinct role.

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To establish an accurate diagnosis and determine appropriate solutions for the problems detected, the history of the child, the family and the environment must be thoroughly understood. It is only with the parents' participation that this history may be reconstructed. A talk with parents may help to understand the child and his or her development. The parents' vision of development is important, since it corresponds to their own perception of children in their particular cultural setting. Further, the pace at which a child develops can only be evaluated with respect to the history of earlier performances and to the factors that may have affected it (illness or an accident, for instance). Parents accompany their children through their personal and family history, even if they occasionally "interpret" instead of "observing" this history. Parents make an essential, although empirical, contribution to the evaluation of children, and one which sheds light on the parent/child relationship as well.

QUESTIONNAIRES

The Home Inventory

The Home Inventory, or Home Observation for Measurement of the Environment Inventory, is centred around the child within his or her environment. It is influenced by Bloom's work on the measurement of environmental processes, Barker and Wright's work on procedures for coding observation of the home environment, and Basile Bernstein's research on the connections between language and

modes of communication within the family, as well as by other research in sociology. It was developed and validated by Caldwell and Bradley in 1978 in the USA. A French Canadian version was produced by Palacio-Quintin and Lavoie in 1986.

This is a guide for an interview to be conducted at the child's home, in his or her presence, since certain questions deal with mother/child interactions. It is used to describe a series of features of the home environment.

There are two versions : one for infancy, between birth and three years, the other for preschool children aged three to six. It is composed of 55 items grouped in 8 subscales covering stimulation through play, toys and reading material (11 items), stimulation through speech (7 items), physical environment (7 items), self-esteem, affection and warmth (7 items), stimulation of academic learning (5 items), variety in stimulation (5 items) and corporal punishment (4 items).

The items are rated "yes" or "no", depending on the examiner's observations and the information afforded by the mother.

This inventory may be used alone or along with mental development tests such as the WPPSI, to evaluate the impact of the child's socioeconomic environment on cognitive development for example. It is a valuable complement to mental development tests, since it provides information on the manner in which the child has progressed. This yields a better understanding of what negative or positive influences were at work, whereas mental development tests only inform on the level reached.

The themes of eight subscales of the Home Inventory are appropriate for all children, but the items must be adjusted to the specific living context.

Examiners must be trained in interview and observation techniques before being taught to administer the Home test. For the latter, it is as important to develop their ability to communicate as to train them in objective observation. Each examiner must be aware of his or her personal, culturally influenced references, so as to avoid setting them up as universal norms. Aside from this requirement, preparation for use of this evaluation tool is relatively easy. In comparison with the mastery of the protocols for psychological tests, it entails fewer difficulties and takes less time. The Home Inventory is valuable for understanding how a population lives, raises its children and educates them, for comparison of children within a same group or in different population groups.

The combined use of a mental development test and of a questionnaire/observation guidelines such as the Home Inventory contributes to a relatively "functional" evaluation of children. It sheds light on cognitive and psychosocial development within a specific setting. This orients action in directions that are not simply centred around the child as a separate entity, but around the individual living in a given setting. Despite its advantages, it seems unrealistic to plan the large-scale use of this type of evaluation

COMBINED EVALUATIONS

Use of existing tools

(mental development test plus Home Inventory), except for research projects.

The Home Inventory is highly sociological in connotation, owing to the objectives of its authors. There are distinct questionnaires and observation guidelines for different professionals working with children. Each profession has its own, commanded by its profile and objectives. These have some points in common, and some specific elements.

Each evaluation system has its advantages and its limits, and sometimes a combination of several tools such as a grid for evaluation, one or several mental development tests and the information gathered by parents may be used. This is the case, for example, when some physicians create their own evaluation battery, in which testing techniques (using the draw a man test or something similar to the Kohs block test) are combined with observation and interviews with the child and the family.

When choosing evaluation tools, there are two alternatives : either use existing tools, or create others.

The choice of tools depends on the objectives of evaluation and on the means available. It is self-evident when tools specially designed for the particular population concerned are available, along with specialists trained in that technique. Such conjunctures are rare, however. Otherwise, one must determine which of the available tools are most relevant, given the children's age, the contents evaluated, local habits and the profile of the users. Caution must be exerted in using a scale or test that was not conceived for the particular population involved.

Translation into the local tongue of an instrument that exists in a foreign language is not in itself an adequate adaptation. Irrespective of whether the original language or another one is used, each item must be analysed before deciding whether it should be included, eliminated or modified. Unsatisfactory items should be replaced by other similar ones corresponding to an evaluation of the same aspects of development. An item involving drawing or writing, for instance, used to assess eye-hand coordination, is equivalent to stringing beads or to any other activity requiring the same skill. It is preferable to eliminate any drawing or writing when children have never held a pencil. A language item based on pictures showing a setting that is foreign to the children should be replaced by other pictures or familiar objects.

Any change in items affects the final score, and therefore leads to reconsideration of the tests results. Whatever their mode of formulation (development quotient, intelligence quotient or mental age), they should not be considered as such, but simply as quantitative indicators of development. For instance : an African child first achieved a score of 90 on a modified version of the Ruth Griffiths mental development scale, followed by a score of 95 on a second test. He gained 5 points in comparison with the previous evaluation. To determine how he ranks in comparison with other children from his milieu, standardization of the modified test would be required. This is a long process, requiring the testing of many chil-

Creating tools for evaluation

Determining developmental landmarks

dren representing a reference population. Perhaps the question of how necessary it is should be addressed before undertaking it.

In the absence of appropriate tests and of workers sufficiently trained in using them, there is sometimes no other alternative than the creation of one's own instruments for evaluation. This is very time-consuming, but it has the advantage of truly corresponding to felt needs and to the resources available. The elaboration of tools for evaluation involves the selection of relevant developmental criteria and the establishment of a reference system for the interpretation of the findings.

To determine developmental landmarks, people from different socioeconomic and occupational categories and from a variety of geographic settings (urban, suburban, rural) are questioned. These may be parents who have raised one or several children, or parents of children of a given age (6 months, 1 year, 18 months, 2 years, 3, 4, 5, 6, 7 years), for instance. Professionals in contact with these children may also be contacted. These include home caregivers, people in charge of day care and education for small children, teachers, doctors, midwives, nurses, etc.

To obtain a representative sample of a given population, other criteria affecting child-raising and education must also be taken into consideration. These are : people's socioeconomic and educational levels.

Within each country, and particularly in developing countries, there are enormous sociocultural disparities. Given this context, it is clearly difficult to select a nationally representative sample, and standardization at the national level is meaningless.

If developmental landmarks are to be established for a community, selected individuals must be questioned, in order to determine the profile of the "ordinary" sociable, proficient, intelligent child, in the eyes of the local community. What a society views as "ordinary" includes the point of view of families, professionals, current research in the field, official structures and the law. For families, normalcy is what they expect of their children at different ages. They are more or less demanding, depending on their knowledge, experience with children and aspirations. For professionals (physicians, psychologists, teachers), it is based on observation in daily practice. Official structures and the law have their own landmarks. Ability to read at age 7 is a reference for some families, whereas others are either not at all concerned about reading, or expect it to be learned much earlier. Numerous factors determine the age at which different achievements are expected.

Selecting criteria

All of the developmental landmarks mentioned by the people questioned are not of equal importance. For practical reasons, their number must be limited. Selection of criteria is based on an understanding of development. It may take its inspiration from existing evaluation scales. When two criteria are in competition, the one most frequently mentioned in surveys of the reference groups is chosen.



*Establishing a reference
system*

A reference system may be composed of lists of aptitudes and of performances (the criteria chosen) to be achieved during a given time ; for instance, what an average child should be able to do at a given age. Another solution involves determining an age limit for each criterion within a given population group, beyond which the eventuality of a problem should be suspected. One variant of this system involves the replacement of an age limit by an age range within which the particular achievement or performance is possible and desirable. Definition of an age limit is sufficient for screening purposes, but where the planning of educational programmes is concerned, age ranges are preferable, since they determine what may be expected of children at different ages.

The reference system requires the simplest possible scoring technique, to avoid difficulties in interpretation and to facilitate reading of the findings. Scoring may be based on points (1 point per item), or by answering "yes" or "no".



ON THE EVALUATION OF CHILD WELFARE ACTION

Use of findings

The fact that the choice of tools, be they simple or sophisticated, is a delicate one should not overshadow the objectives of evaluation, which aims at helping children to develop their potentialities to the utmost, and to flourish within their milieu. It is only meaningful if it has a positive effect on children's future. If it is no more than a statement of fact not followed by action, it is useless. It is only conceivable if it is functional, and should be ruled out if it has negative repercussions such as the segregation or "labelling" of children.

Positive utilization of evaluation is only conceivable if the objectives for which it was designed are pursued. Indeed, if the purpose of evaluation is to determine the appropriateness of a programme, it should lead to the improvement of the latter. Conversely, if it aims at detecting handicaps, steps should be taken to provide appropriate care. Whatever the findings, integration of these children within their peer group should be preferred to segregation in a group of disabled children.

The idea that a child needs care is not synonymous with non-achievement, or indicative of defects requiring compensation by specific rehabilitation, no more than it should mean discrimination. Except in some very severe cases, care may be delivered in the child's usual setting. It does not involve the child only, but includes the family, the existing care-taking structures and their professionals, the entire community. The implementation of comprehensive solutions corresponding to problems detected during evaluations contributes to future prevention while it provides a response to existing, known needs.

Many children experience language difficulties, owing to a lack of verbal exchanges with their environment. Sensitization and training of parents and professionals as to the importance of language and the means of stimulating it represents a comprehensive, long-term response which is less costly and easier to set up than individual rehabilitation by a speech therapist, when one is available. One advantage of this solution is that it avoids the repetition, over time, of the same difficulties within families and groups of children.

Positive and negative value judgements should be banished. Both may have negative effects on children. Positive judgements lead some parents to develop disproportionate expectations in comparison with their child's actual potential. Sometimes they confuse "precocious" with "gifted", or link "precociousness" with "success". Some children are then mistreated and forced to learn formal lessons for which they are not ready. They invest all their energy in this to the detriment of their physical and personal fulfillment. Negative labels either result in pressure to achieve a veneer of the achievement that has not yet had the time to mature, or converse-



Evaluation and educational programmes

Programmes for children

ly, discourage parents. Their expectations for their child decline, and they no longer offer the stimulation that might help him or her to progress.

Care must be taken not to establish a precise diagnosis on the basis of imprecise, partial findings. An IQ, for instance, only takes certain manifestations of intelligence into account. Every achievement takes place in a specific context, and is linked to meaningful aspects of the situation and to the motivations generated by it. People take different routes in travelling from childhood mental processes to adult ones. An IQ describes the level of intelligence of a "theoretical" individual belonging to a specific population group in industrialized countries, in most cases. In itself, it cannot be conclusive as to insufficient achievement, particularly when applied to children in other cultures.

In this context, evaluation is a means of measuring the level of development attained or the progress made. It is by no means an educational technique, even if certain tests use the children's usual activities. The test situations constitute observation systems, and should not be confused with the objectives of programmes. Some people wrongly use the contents of subtests as teaching programmes. This completely destroys their value in evaluating development, and reduces this type of programme to an attempt to achieve specific skills, independently of the overall context. This type of programme does not take children's environment, their desire to grow up and to learn, or their active participation in their own development into consideration.

The content of the tests is too restrictive and artificial to be used to promote children's overall development. It is formal, and does not take into account the opportunities offered by the child's physical and human environment. Furthermore, all of the test items are not directly related to the aptitudes that they evaluate. The concept of body schema is an illustration of this. It is not only by drawing a person that children construct this schema. It is connected with their sexual identity, their motor and emotional experiences and the way their body is perceived by their parents. Some test items do occupy a special place in educational programmes, on the other hand. Language is an important part of mental development tests, and it is most important that it be an integral part of all formal or informal programmes for children.

The different evaluation tools demonstrate the complexity of development and the multiplicity of the indices that may be used to discover how it progresses. They emphasize the importance of observation and the need to include it in all training efforts aimed at parents and professionals.

Each adult in charge of children or working in child welfare has a role to play in contributing to children's development and to the surveillance of this development. Surveillance of development cannot be reduced to the monitoring of growth, or of psychomotor development, but encompasses all aspects of development. These are interconnected, and affect one another. Actions aimed at children's welfare must take this into account, if they are to maximize

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Programmes for adults

their impact. Improvement of children's diet only, for instance, has less of an impact on development than the same action accompanied by attention given to their psychomotor development.

In evaluating a nutrition programme for children, any assessment of the benefits derived from it should include monitoring of growth and achievements with respect to development.

Parental knowledge and attitudes and the competencies of professionals are distinct and complementary. For a better comprehension and understanding of children's development, accompanied by optimal, comprehensive care, the two are inseparable.



FRENCH HEALTH RECORD BOOK

Examination between ages 5 and 6

Medical examination for primary school entrance

Entering primary school, between ages 5 and 6, is an important step in a child's life. The child's development must be assessed at this point, and this should be done in the school environment. Take sure this is done.

Living conditions

Does the child live with his or her parents ? yes ☐ no ☐

If yes, who takes care of him or her ?

Parents

Grandparents

Day care mother

School

Other :

If no, where does he or she live ?

With other relatives

With a care mother

In an institution

Other :

Does he or she attend school regularly ? yes ☐ no ☐

Modifications

in the family situation and the child's living conditions since the previous examination (move, birth in the family, etc).

Hearing test

Test (s) used : _____

R ear : normal yes ☐ no ☐

L ear : normal yes ☐ no ☐

Mouth

show : x = teeth missing

/ = untreated dental caries

o = treated teeth

R	V	IV	III	II	I	I	II	III	IV	V	L
V	IV	III	II	I	I	II	III	IV	V		

First permanent molars (6 year-old teeth) :

Number : _____ condition : _____

Articulation disorders : _____

Eye test

Test(s) used : _____

Visual acuity	R	L
Vision at a distance : uncorrected	/10 ⁰	/10 ⁰
following correction	/10 ⁰	/10 ⁰
Binocular vision		

Strabismus: yes ☐ no ☐

Other anomalies: _____

Urine

Sugar : _____ Proteins : _____

Physical examination

Weight : _____

Height : _____

Blood pressure : _____

Psychomotor examination

General motor skills : _____

Equilibrium on one foot : _____

Walking heel-toe : _____

Coordination : _____

Lateral dominance (right, left, not fixed):

Hand : _____

Eye : _____

Foot : _____

Orientation in time and space : _____

Graphic skills : _____

Language comprehension : _____

Behaviour (at home, in class, during testing) : _____

Tests, if any : _____

Conclusions

Describe any definite or suspected anomalies, complementary examination, treatment and recommendations.

Aptitude for physical education : _____ Group : _____

Examination performed on (date) _____

signature and stamp

by Dr _____



AN EXAMPLE : GUIDELINE FOR OBSERVATION BY EDUCATORS WORKING WITH SMALL CHILDREN.

PRIMARY RECORD SUMMARY : NURSERY AND FIRST YEAR INFANTS (5 to 8 years) (confidential)

School
school year
19 - 19

Surname	Sex	Date of Birth		
Forenames		Day	Month	Year
Age on September 1st in current school year				

This record is a summary of progress and should be completed when the child leaves the nursery school or class. The record should be completed after four terms.

Age on entry/transfer to _____
primary (infants) department _____ years months

Terms spent in nursery _____
school/class _____ part time _____ full time

Pre-school experience (has the child been cared for at home, by some other adult, in a day nursery).

Position in family

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Number of children

Indicate size and position in family as follows :

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

3rd in family of 5

1. First language of child _____
2. First language of parents _____
3. Language spoken at home _____

Any comments on regularity of attendance and punctuality :

Physical disabilities which may affect the child's schooling.

Social development. Please comment on :

- adjustment to nursery/primary school ; changes of patterns of behaviour, relationships with adults and children (e.g. solitary child).

Special interests and preferred activities (e.g. painting, music, imaginative play, construction play). Comments.

Physical skills.

Large muscle control (walking, running, hopping, skipping). Comments.

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☐

Finer muscle control (use of pencils, pens, crayons, scissors, brush). Comments.

Tendency to use left hand.

Degree of independence. Comments.

Tick

1. Deals with own clothing

☐

2. Deals with toilet needs

☐

Attitude to learning. Please comment on the following : use of time, curiosity, problem-solving, persistence.

Language skills. Spoken language
including ability to

Comments.

Tick

Express simple needs

☐

Ask questions (other than making requests)

☐

Talk about past experiences

☐

Re-tell stories

☐

Project into the future and use imagination

☐

Give explanations, e.g. of how and why things happen

☐

Early reading skills including

Comments.

Tick

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☐ Enjoyment of stories, read and told

☐

Interest in books

☐

Interest in "own talk" written down

☐

Reading back "own talk" written down

☐

Elementary concepts of print

☐

Beginning to use reading cues

☐

If appropriate name any books the child has read.

Early mathematical experiences.

Comments.

Tick

Can choose a way to sort objects and explain what has been done

☐

Can pair off the members of two sets to show whether there is a one-to-one correspondence between the two sets or not

☐

Can talk about past, present and future events and can put everyday events into sensible time sequences

☐

Can put several objects in order of length and explain the relationships

☐

Can make comparisons between e.g. heavier and lighter, larger and smaller, taller and shorter

☐

Can compare the capacities of two containers by pouring liquid from one to the other

☐

Can use materials to make something of own choice and to copy another construction

☐

Can use and respond to language which describes position such as "inside", "next to", "through" and "between"

☐

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☐

Comment on any other aspect of mathematical experience.

Special needs and aptitudes.

Signature _____ (Class Teacher)

Date _____

Signature _____ (Head Teacher)

Date _____

A RESEARCH PROJECT IN ARGENTINA-CHILD DEVELOPMENT

A major research project on the age at which different events in children's psychomotor and cognitive development occur, between birth and age six years, has been conducted throughout Argentina (1). This country, like many others, already possessed serious studies of physical development, used for the establishment of national growth curves, but aside from a few studies of small groups of children, there was still no instrument available for the surveillance of Argentinian children's psychomotor development, using national standards.

The present cross-sectional study covered a representative sample of 10,400 children from the country's various provinces and the different socioeconomic strata of the population. It was conducted by 212 specialists, including 200 paediatricians from across the country, selected within each province for their experience and reliability. Workshops were organized to familiarize them with the technique, tools and instruments used.

The children were divided into 10 age groups, from birth to 6 years, and given a battery of tests probing the different spheres of development, including harmonious development of personality and relations with the family. These were selected following an investigation of the numerous tests used around the world. To complete the survey, information on each child's family and physical development, as well as some demographic data, was collected.

The statistical analysis of all of this information is next on the agenda. This will make it possible to assess the influence on maturation of variables such as socioeconomic level, parents' educational level, place of residence, physical growth, family size, etc. This project will afford a picture of the psychomotor development of children throughout Argentina, although it will not yield an evaluation of the relative influence of all of the variables affecting children's development. With this broad picture of the situation, subsequent in-depth studies may be launched to substantiate any serious differences eventually detected between population groups.

Soon physical and psychomotor monitoring using national standards will be feasible for all of Argentina's children and appropriate, evaluable programmes will be available for all those in need of them, either at an individual or a collective level. This understand-

(1) Hospital de Pediatría S.A.M.I.C. "Prof. Dr. Juan GARRAHAN", Equipo de Crecimiento y Desarrollo. Drs. Horacio LEJARRAGA and Sara KRUPITSKY. Buenos Aires, Argentina.

- ding of children's situation, and the possibility of making comparisons, will also improve the identification of at-risk groups, the adjustment of health, educational and stimulation programmes to children's needs and to local situations, and the longitudinal follow-up of changes.

A document has been prepared. It contains the instructions for the survey, the working protocols and tests for the evaluation of each child on the basis of his or her age group.

A.M. MASSE-RAIMBAULT



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THE DEVELOPING CHILD : TOOLS FOR MONITORING

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If children are to achieve overall fulfillment, their essential needs such as food, affection, cognitive and psychomotor stimulation and defences against infectious diseases must find satisfaction within their surroundings.

Workers who monitor their development have many tools at their disposal, including charts for physical growth and personal vaccination and health records, but beyond these, the information gathered must be interpreted and used to improve interventions.

Few countries add monitoring of psychomotor development, using valid instruments, to the surveillance of physical development, especially in children over two. Nowhere in the world is it enough to concentrate on improving children's diet, particularly where underprivileged groups are concerned. Better results are attained when food and diet programmes are implemented in conjunction with activities which enable children to develop their full potential in all spheres, without special emphasis on any particular field, and to learn the necessary skills.

The present work analyses different instruments for the evaluation of children's development, along with their limits. Hopefully it will contribute to the improvement of programmes for the health and education of children, as well as of their follow-up and of information for parents and personnel training.

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